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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,999	07/05/2006	Makoto Noda	16169.27	4539

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EXAMINER	
CHEN, JIANZI	
ART UNIT	PAPER NUMBER
2821	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,999	NODA, MAKOTO	
	Examiner	Art Unit	
	Jianzi Chen	2821	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 September 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 July 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☒ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *07/05/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Figures 8-10B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities: page 3, line 19, "Fig. 9" should be changed to - -Fig. 9A- -; page 3, line 32, "61" should be changed to - -51- -; page 4, line 2, "Fig. 10" should be changed to - -Fig. 10A- -; page 7, line 28, "Fig. 2" should be changed to - -Fig. 2A, Fig. 2B, and Fig. 2C- -; page 9, line 27, "13" should be changed to - -31- -; page 15, line 23, "Fig. 7" should be changed to - -Fig. 7A and Fig. 7B- -; page 16, line28, "Fig. 9" should be changed to - -Fig. 9A- -; "Fig. 10" should be changed to - -Fig. 10A- -. Appropriate correction is required.

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 18-20 been renumbered 17-19 respectively.

Claims 4 and 13 are objected because of the following: claim 4, line 5, and claim 13, line 4, subject matter "a means for adjusting the frequency of the high frequency power" is not clearly explained in the description, which burdens examiner to understand.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 4, and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Okamoto Masashi, JP Publication No. 08-031585

As to claim 1, Okamoto discloses in fig.1 a dielectric barrier discharge lamp drive circuit (abstract) comprising a sealed container (4, fig.1) having a dielectric body (3) and

containing discharge gas (section 26), and a pair of electrodes (2a and 2b), facing each other on the sealed container with the dielectric body (3) and the discharge gas located therebetween (as shown in fig.1);
a drive AC generation circuit (comprising 5, 8, 9, 18, and 19) for generating high frequency power applied between the pair of electrodes (2a and 2b); and
a reactor member (10 or 10') connected in series between the drive AC generation circuit (comprising 5, 8, and 9) and the discharge lamp (4).

As to claim 2, the dielectric barrier discharge lamp drive circuit according to claim 1, Okamoto further discloses in fig.1, wherein the reactor member (10 or 10') is an inductance element (10, or 10').

As to claim 4, the dielectric barrier discharge lamp drive circuit according to claim 1, for examining purpose, examiner interprets a means as oscillator, Okamoto further discloses in fig.1, wherein the drive AC generation circuit (comprising 5, 8, 9, 18, and 19) includes an inverter (9) for converting DC power to the high frequency power, the inverter including a means (16) for adjusting the frequency of the high frequency power.

As to claim 11, the dielectric barrier discharge lamp drive circuit according to claim 1, Okamoto further discloses in fig.1, wherein the drive AC generation circuit (comprising 5, 8, 9, 18, and 19) includes a step-up transformer (8) for boosting the high

frequency power, and the reactor member (10) is connected in series between the step-up transformer (8) and the discharge lamp (4).

As to claim 12, the dielectric barrier discharge lamp drive circuit according to claim 1, Okamoto further discloses in fig.1, wherein the drive AC generation circuit (comprising 5, 8, 9, 18, and 19) includes a step-up transformer (8), having a primary coil (6) and a secondary coil (7), for boosting the high frequency power, and the reactor member (10') is connected in series to the primary coil (6) of the step-up transformer.

As to claim 13, the dielectric barrier discharge lamp drive circuit according to claim 2, for examining purpose, examiner interprets a means as oscillator , Okamoto further discloses in fig.1, wherein the drive AC generation circuit (comprising 5, 8, 9, 18, and 19) includes an inverter (9) for converting DC power to the high frequency power, the inverter including a means (16) for adjusting the frequency of the high frequency power.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Okamoto Masashi, JP Publication No. 08-031585 as applied to claim 1 above, and in further view of Matsumoto Shinichiro, JP Publication No. 2002-151288.

Regarding claims 3, the dielectric barrier discharge lamp drive circuit according to claim 1, Okamoto discloses a dielectric barrier discharge lamp drive circuit (abstract) comprising a reactor member (10 or 10') as shown above; but does not specifically disclose the reactor member is a leakage transformer as claimed. However Matsumoto teaches of a discharge lighting device (abstract) wherein the reactor member is a leakage transformer (section 19). In purpose of limiting the circuit impedance. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine Matsumoto's invention with Okamoto's invention in order to save the manufacturing cost and reduce the circuit space.

Claims 5-10, 14-16, and 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto Masashi, JP Publication No. 08-031585.

Regarding claim 5, the dielectric barrier discharge lamp drive circuit according to claim 1, Okamoto discloses a dielectric barrier discharge lamp drive circuit (abstract) comprising a reactor member is an inductance element as shown above; but does not specifically disclose the way of varying the inductance value to get different frequency as claimed. However, in section 8, Okamoto teaches wherein the reactor member has an inductance value selected so that an impedance of a load as viewed from the drive AC generation circuit is set to current limiting impedance necessary for uniform light

emission of the discharge lamp (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary an inductance value to limit the circuit impedance for uniform light emission of the discharge lamp in order to make this circuit more flexible for the practical application.

Regarding claims 6-10, and 14-16, 17-19, the dielectric barrier discharge lamp drive circuit according to claim 1, Okamoto further teaches wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power is lower than the resonance frequency (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the **limitation from claim 7**, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power is positioned at a steep gradient part in a resonance impedance frequency characteristic curve (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 8**, wherein the impedance component has an inductance value

selected so that impedance of the reactor member cancels at least part of the impedance of the discharge lamp (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 9**, the dielectric barrier discharge lamp drive circuit according to claim 8, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power of the drive AC generation circuit is set in the vicinity of the resonance frequency (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 10**, the dielectric barrier discharge lamp drive circuit according to claim 8, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power of the drive AC generation circuit is lower than the resonance frequency (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 14**, the dielectric barrier discharge lamp drive circuit according to claim 2, wherein the reactor member has an inductance value selected so that an impedance of a load as viewed from the drive AC generation circuit is set to a current limiting impedance necessary for uniform light emission of the

discharge lamp (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 15**, the dielectric barrier discharge lamp drive circuit according to claim 2, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power is lower than the resonance frequency (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 16**, the dielectric barrier discharge lamp drive circuit according to claim 1, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power is positioned at a steep gradient part in a resonance impedance frequency characteristic curve (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 17**, the dielectric barrier discharge lamp drive circuit according to claim 2, wherein the impedance component has an inductance value selected so that impedance of the reactor member cancels at least part of the impedance of the discharge lamp (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 18**, the dielectric barrier

discharge lamp drive circuit according to claim 17, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power of the drive AC generation circuit is set in the vicinity of the resonance frequency (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text); Okamoto further teaches the limitation from **claim 19**, the dielectric barrier discharge lamp drive circuit according to claim 17, wherein a series resonance state is set by an inductance component of the reactor member and a load electrostatic capacity component of the discharge lamp, and the inductance component has an inductance value selected so that the frequency of the high frequency power of the drive AC generation circuit is lower than the resonance frequency (adjusting the inductance of the reactor member and the capacitance of the capacitor to obtain a desired operation frequency, full text). It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary an inductance value to limit the circuit impedance for uniform light emission of the discharge lamp in order to make this circuit more flexible for the practical application. It would have been obvious to one having ordinary skill in the art at the time the invention was made to vary an inductance value to limit the circuit impedance to get a desired frequency for the discharge lamp in order to make this circuit more suitable and flexible for the practical application.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianzi Chen whose telephone number is 5712705292. The examiner can normally be reached on Monday through Thursday 10:00- 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on 5712721662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jianzi Chen/
Examiner, Art Unit 2821

/Douglas W Owens/
Supervisory Patent Examiner, Art Unit 2821
September 30, 2008